

AUDUBON

May-June 1995

WATER WORLDS

America's National
Marine Sanctuaries

Wildlife Images
of the Stone Age

An Exclusive Portfolio

Counting Caribou

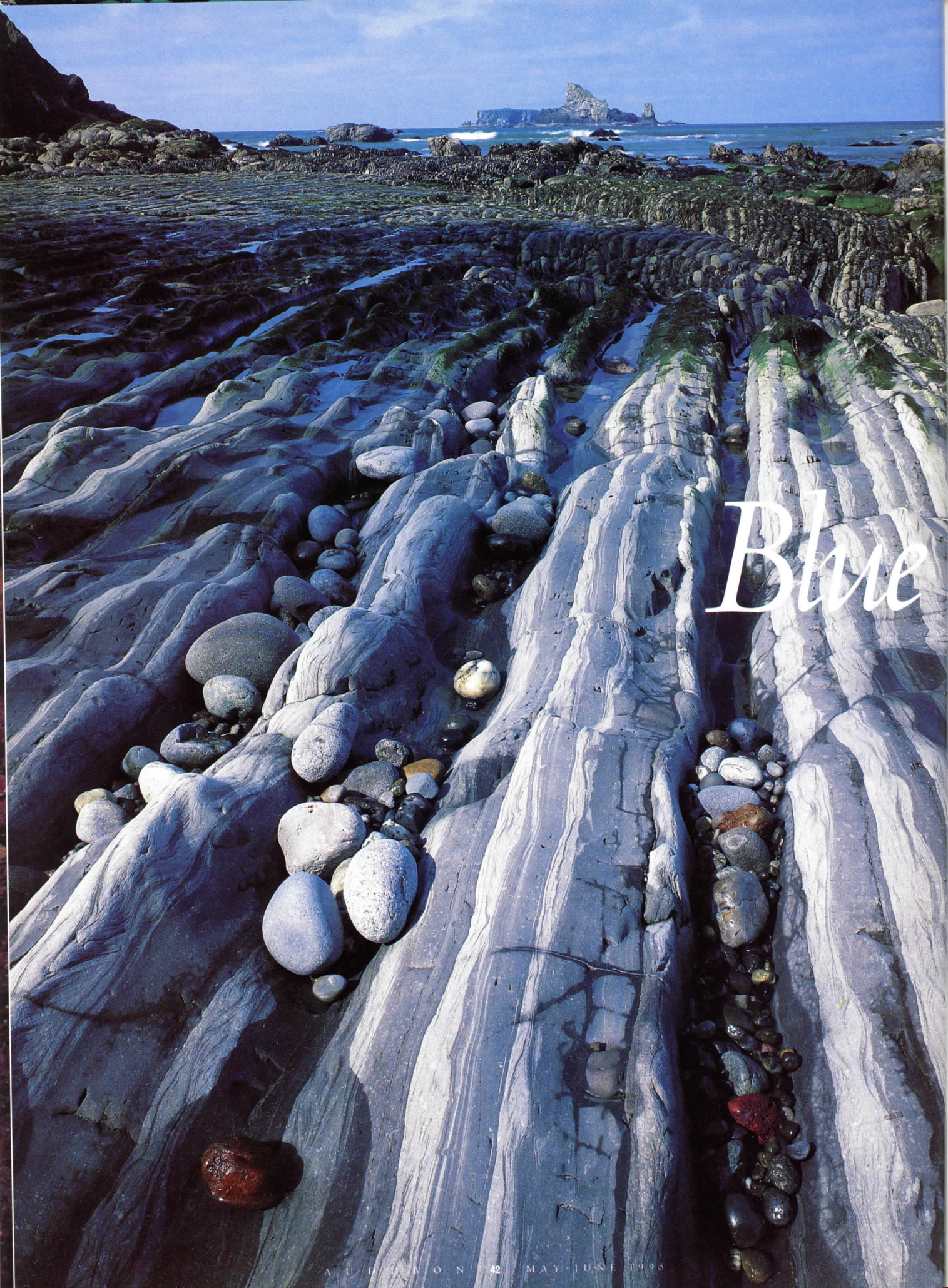
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Blue



The landscape that surrounds Monterey Bay is a study in water, light, and wildlife, mesmerizing in its diversity: Rocky offshore islands serve as refuges for hundreds of lazing sea lions wedged into crags 10 feet above the Pacific, breaking against the cliffs. On a crescent beach, gray-and-black-spotted harbor seals haul themselves up on the coarse sand; a raft of half a dozen sea otters loll in the kelp. Pelicans make their kamikaze dives; cormorants and gulls fly about like rush-hour com-

just as diverse, maybe even more frenetic. Pinnacles of rock rise from a sea bottom littered with orange starfish, fast-moving sunflower stars, and purple-black sea urchins. A large shoal of bluefish hangs suspended amid yellow-green stalks of 65-foot-tall giant kelp. There are rock walls carpeted with small pink strawberry anemones, where bulbous-faced lingcod and rockfish shoot from crevices, and decorator crabs, covered in red seaweed and green algae, camouflage themselves among red-plated mollusks, white anemones, and purple-

ringed top snails.

Once, this ocean habitat might have been sectioned into underwater oil fields and auctioned off to the highest bidder. Once, the animals and fish might have been threatened by oil spills. But in 1992 Monterey Bay was declared a national marine sanctuary—running 350 miles along the shore and 50 miles out to sea. Within its boundaries lies a submarine canyon bigger than Yosemite and deeper than the Grand Canyon. “This is a new frontier,” says Ed Cooper, a diver based at Monterey. “There are pinnacles on this coast that have never been dived on. Out there in the canyon they’re finding new species of life every week.”

Like Monterey, many of the other national marine sanctuaries remain largely unexplored, alive in ways our deserts, prairies, and mountains haven’t been in more than 100 years. The sanctuary program was created in 1972, just a century after Yellowstone was dedicated as the first national park; over the

past 23 years it has grown to encompass 12 sanctuaries under the jurisdiction of the National Oceanic and Atmospheric Association (NOAA). Some are as small as a dot in the ocean—such as the square-nautical-mile preserve that lies off the coast of North Carolina, safeguarding the remains of the Civil War-era ironclad the *USS Monitor*. Some, like the Florida Keys sanctuary, stretch for miles—in this case, 220, all the way from Soldier Key to the Dry Tortugas.

According to their mandate, the marine sanctuaries are supposed to protect “conservation, recreational, ecological, historical, research, educational, or aesthetic qualities” on the United States’ ocean frontier. Though they exclude oil and gas drilling, mineral mining, and ocean dumping, they usually allow uses like fishing and commercial shipping. In some, however, such as the Florida Keys, areas that are particularly sensitive are being designated no-take replenishment zones,

Frontiers

The marine sanctuaries are largely unexplored, alive in the way our prairies and deserts were a century ago.

BY DAVID HELVARG

muters. A great blue heron stands on a floating piece of plywood; he strikes below the surface with his rapier bill and tumbles in after it, sinks, and then resurfaces in an undignified ruffle of feathers.

From the Coast Guard pier you can see squadrons of brown pelicans and hear the barking of seals. Thousands of dusky shearwaters darken the horizon as they move like a squall line over the water. Just off the pier a sea otter grooms itself, dives, and comes back up, swimming on its back, cheerfully tearing the legs off a crab with its pointy little teeth.

Below the surface of the sea there is another world—one



Washington's Olympic Coast sanctuary (left); at Flower Garden Banks, a manta with remoras (above).



where fishing and coral collecting will be off-limits, to allow species to rebound.

The replenishment zones aren't limited to Florida. The manager of California's Channel Islands sanctuary, NOAA Lieutenant Commander John Miller, sees fishing as having a big impact on his reserve. The state's Department of Fish and Game, which shares jurisdiction within state waters, has established a no-take fishing zone off Anacapa, the smallest of the Channel Islands. "If you dive, you notice more abalones and lobster and fish

"It's really this tiny thing buried in the bureaucracy, and everyone above it takes their cut of the money," says Captain Francesca Cava, the sanctuary program chief from 1992 to 1994. "I was at [NOAA] mission and priority meetings where the sanctuary program wasn't even on the table." Cava, a quietly determined woman, served 21 years in the NOAA Corps (the organization's 400-member uniformed service) before resigning last October, in part because, she says, she wasn't given the



group called the Conch Coalition, which opposes the sanctuary and its regulations. In 1992 NOAA attorneys brought suit against world-famous treasure hunter Mel Fisher for destroying a seagrass meadow off Marathon Key. A federal court granted a preliminary injunction to prevent Fisher's company from

using prop-wash deflectors to search for sunken ships in the sanctuary. The suit has not yet been resolved.

But Fisher, a local hero to many, and his attorney, David Paul Horan, helped mobilize treasure hunters, shipwreck "salvagers," and others involved in extractive industries on the reef in an antisancuary campaign. "We don't feel NOAA represents anyone but another layer of bureaucratic government involvement down here," says Conch Coalition spokeswoman Michele Wells-Usher. "The answer to our ecological problems never resides in the house of the federal government."

To emphasize this belief, the coalition staged a number of angry protests, including

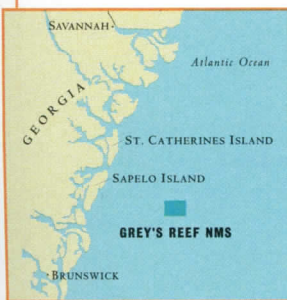
tamination in parts of the bay.

The Keys are also suffering the effects of overdevelopment. A 1993 study done for the Environmental Protection Agency found 5,000 illegal cesspits there; Key West has a municipal sewage outfall that discharges into the sanctuary.

Tourism draws some 4 million visitors a year; six times the number of vacationers that visit Australia's Great Barrier Reef now swim and play on top of coral gardens one-tenth its size. At the same time, plans are moving forward to expand U.S. Route 1 to a four-lane highway through Key Largo in order to attract more visitors.

All these problems have contributed to the political trouble posed by a local

GRAY'S REEF



Designated: 1981

Location: 17.5 nautical miles east of Sapelo Island

Size: 17 square nautical miles; rock reef—limestone outcropping

Special features: Calving grounds for endangered northern right whales (December through March)

Species: Loggerhead turtles; northern right whales; groupers, mackerel, king mackerel, Spanish mackerel, barracuda, black sea bass

Historic resources: Potential artifacts of prehistoric Indian sites

Activities: Sport fishing; diving; swimming; boating

out there in the protected area," Miller says. "It's like you cross this invisible line and find all this additional life." Actually, it's a somewhat visible line, as lobster fishermen set up their traps just outside the no-take boundary.

However, for all its successes, the program faces problems as it heads toward its first quarter-century. The sanctuaries are seriously underfunded and understaffed; they lack political clout, even within their own agency; and they are not widely recognized by the public. Partly because they're not well known, they are easy targets for special interests seeking continued industrial use of the marine environment.

support she needed. "It's almost like you plant a seed to germinate and then spray it with herbicide," she says.

The sanctuary at the Florida Keys illustrates some of the problems within the program. Declining water quality has reduced catches and led to coral diseases, bleaching, and declining growth; sponge and seagrass die-offs; and algae blooms. South of the Everglades, Florida Bay recently suffered a fish-killing red tide that scientists suspect fed off nutrients flushed into the water by sugar-industry operations in the Everglades. Further, a National Marine Fisheries report cites high levels of endosulfan pesticide con-

FLORIDA KEYS



Designated: 1990

Location: Waters surrounding Florida Keys to the Dry Tortugas

Size: 2,800 square nautical miles

Special features: 6,000 species not otherwise protected

Species: Brain and star corals; gorgonian corals, including sea fans; tarpon, parrot fish, sharks, barracuda, snappers, tangs, wrasses; nudibranchs; feather duster worms; bottle-nosed and stenella dolphins; manatees; spiny lobsters;

blue crabs; green, loggerhead, and hawksbill turtles; birds, including kingfishers, roseate spoonbills, scarlet tanagers, black skimmers (late September through early April), and great white and blue herons, bald eagles, ospreys, brown pelicans (year-round)

Historic resources: Shipwrecks, including the wreck of the Spanish treasure ship Atocha and the slave ship Henrietta Marie

Activities: Diving; sport fishing, including fly fishing; snorkeling; sailing; boating; swimming

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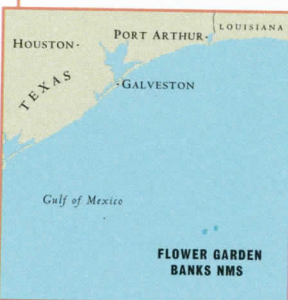
one at which sanctuary manager Billy Causey and his citizen-advisory-council chair, George Barley, were hanged in effigy. Causey's son was also harassed at school by children of fishermen and salvagers.

But activist Craig Cuirolo warns, "When you enter a highly developed area that al-

ready exceeds its carrying capacity and expect habitat protection to be a priority, it won't happen without conflict." A sun-weathered former charter-boat captain, Craig and his wife, DeeVon, are founders of Reef Relief, a local environmental group that helped campaign to establish the sanctuary in 1990.

The battles in Florida are not the first to be fought over the marine-sanctuary program. The push to create the sanctuaries was in large measure a response to public anger over the disastrous Santa Barbara oil spill of 1969. Still, when Congress established the program in 1972, the oil and gas industry challenged it, as did the Department of Defense. While ap-

FLOWER GARDEN BANKS



Designated: 1992

Location: 105 nautical miles southeast of Texas-Louisiana border

Size: 41.7 square nautical miles

Special features: Northernmost coral reef in the United States

Species: Hard corals, mostly brain and star; coralline algae; hammerhead sharks (January through February), whale sharks; spotted eagle rays (spring), manta rays; loggerhead and hawksbill turtles; tropical-reef fish

Activities: Diving; some sport fishing

pearing to stand firm against this political pressure, Congress failed to provide the new program with any funding at all during its first seven years of existence.

In 1975 the first marine sanctuary was established off North Carolina, after a Duke University research vessel discovered the wreckage of the

USS Monitor where it had sunk in a storm in 230 feet of water. At the end of the year a second sanctuary was established to protect a fragile coral-reef habitat at Key Largo, Florida, a site that had already been under a presidential protection order since 1960. Both sanctuaries were financed by moneys diverted



A brilliant garibaldi fish (top left) at California's Channel Islands sanctuary; an Atlantic wolffish (above) at Stellwagen Bank, off Massachusetts.

NORMAN DESPRES; TOM CAMPBELL (LEFT)



Among the most delicate of the undersea resources the sanctuaries are called upon to protect are living coral reefs, prey to collectors and threatened by sailboats as well as by unwitting divers.



Large star coral (above left), at Flower Garden Banks; spiny brittle star corals (above) at Channel Islands; red night shrimp (above right) at Flower Garden Banks; a school of smallmouth grunts (right) the Florida Keys; a leather star (left) on a sea of strawberry anemones at Monterey Bay.



CLOCKWISE FROM TOP LEFT: GREGORY S. BOLAND; MARK CONLIN; JESSE CANCELMO; LARRY LIPSKY; BRANDON D. COLE



from other NOAA programs.

Beginning in 1977, President Carter accelerated the designation process, which led to the establishment of four new sanctuaries, off Florida, Georgia, and California, including the 1,252-square-nautical-mile Channel Islands sanctuary, whose waters are frequented by 27 species of whales and dolphins.

During the eight years of the Reagan administration, the U.S. coastline came under siege. Secretaries of the Interior James Watt and Donald Hodel planned to open 1 billion acres of the outer continental shelf to oil and gas development, greatly expanding the number of drilling platforms off the coast of California and opening New England's historic fishing grounds and Florida's coral reefs to drilling for the first time. Hodel accused those opposed to the plans of wanting to place the country "at the tender mercies of OPEC." What the administration and NOAA's political appointees failed to count on, however, was an explosion of grass-

roots outrage over the proposed oil leases.

In the early 1980s tens of thousands of protesters across the country, fearful of oil spills from drilling platforms and tanker accidents, began to turn out at raucous public hearings held by the Department of the Interior's Mineral Management Service, launched petition campaigns, and took to the airwaves. Polls showed opposition to the lease sales running at 70 to 85 percent in coastal states like California, Massachusetts, and Florida. "I've never seen such a broad coalition form so quickly in my life," says Leon Panetta, a former congressman from Monterey and current White House chief of staff. "It was a real groundswell."

In Florida, threats of oil drilling and three ship groundings that took place within 18 days of each other in 1989 inspired a movement to extend sanctuary protection throughout the Keys. "This community was never more galvanized than when there was talk of an oil spill,"

says Chris Doyle, a former reporter with the *Key West Citizen*. "People realized what oil could do to our waters and reef system. The economy would be gone; it would be the end of a way of life."

In central California an alliance of county governments commissioned a study that found that their area—worth \$50 billion in real estate, tourism, and other economic resources—depended on a clean and healthy ocean;

antidrilling groups linked up with local governments, the tourist industry, and commercial fishermen to lobby for permanent protection of the coastline.

"When the sanctuary program first came into being, we raised hell because we wanted to make sure control of fishing continued under existing state and federal rules and that we didn't get saddled with another layer of regulation," says Zeke Grader, executive director of the Pacific Coast Federation of Fishermen's Associations. "But later we came to see that if you get involved in the process it may also be an opportunity to protect critical habitat."

Commercial fishermen who have supported sanctuaries as a protection against oil drilling, marine mining, and dumping in their fisheries have done so with the understanding that they wouldn't face any new restrictions. Unfortunately, decades of lax state and federal enforcement, growing fleets, high-tech fishing technology, and polluted spawning habitats have led to the collapse or endangerment of most major U.S. commer-

CHANNEL ISLANDS



Designated: 1980

Location: Pacific Ocean, approximately 20 nautical miles off Santa Barbara, California

Size: 1,252 square nautical miles

Special features: Between March and May, the largest concentration of marine mammals in the United States—more than 10,000 seals and sea lions—congregate at Point Bennett Beach (San Miguel Island); Anacapa Island is the only permanent breeding ground for California brown pelicans

Species: Kelp; gray whales; elephant and harbor seals; California sea lions; red urchins; abalones; rockfish; sea anemones; purple hydrocorals; octopuses; California spiny lobsters; rock crabs; brown pelicans, Brant's cormorants, double-crested cormorants, pelagic cormorants, Xantus's murrelets, pigeon guillemots, Cassin's auklets

Historic resources: 100 shipwrecks within sanctuary; Native American artifacts—onsore middens as well as underwater finds

Activities: Diving; whale watching; fishing; tidepooling; sailing; hiking on islands

Note: Visits to Santa Cruz Island only by permit from the Nature Conservancy

cial fisheries, including many located within the sanctuaries.

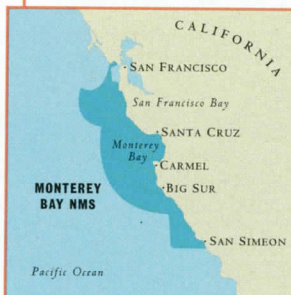
"If a case can be made for regulating certain gear or fisheries we'll listen, but it has to make sense," Grader warns. His organization's successful working relationship with Ed Ueber, manager of the fishery-rich Gulf of the Farallones and Cordell Bank sanctuaries, as well as part of Monterey Bay, has encouraged other fishing-industry groups

to work with and support the newer Stellwagen and Olympic coast sanctuaries. "Overall, the sanctuary program can work well and be beneficial to fishermen," Grader says. "The problem is, [the sanctuaries] don't have enough people to do their own work effectively. They've always been the poor stepchild in NOAA."

In 1988 Congress joined the fast-growing "seaweed rebellion," identifying a number of new sanctuaries for designation. As a result, the last seven years have seen the dedication of more than half a dozen new sites, including the rugged Olympic coast of Washington, with its huge bird rookeries, cobbled beaches, pine-covered sea stacks, and deep-ocean geothermal vents, where giant clams and five-foot-long sea worms live off volcanic sulfur emissions.

"I'd say it's rare that a week

MONTEREY BAY



Designated: 1992

Location: Pacific Ocean, between Cambria, California, and the Marin headlands

Size: Larger than either Yosemite or Yellowstone—4,024 square nautical miles

Special features: Kelp forest; closest-to-shore deep-ocean environment in the continental United States; one of North America's deepest underwater canyons; Native American relics (onsore); Monterey Bay Aquarium

Species: Giant squid; gray whales (late November through late January; return migration in late spring), endangered blue whales; sharks; sea otters; seals; sea lions; northern anchovies; giant kelp; sandpipers, cormorants, brown pelicans

Historic resources: Wreckage of 1,276 vessels, including the USS Macon, sunk in 1935

Activities: Great American Fish Count (for volunteer divers; call the sanctuary for dates and other information); diving; whale watching

goes by where I'm not involved in some sanctuary program or discussion," says Douglas Hall, assistant secretary for oceans and atmosphere in the Department of Commerce and the number two man at NOAA. "The [Clinton] administration has increased the sanctuaries bud-

get from seven million dollars to twelve million dollars in an extraordinarily bad fiscal climate, which I think demonstrates a serious commitment. Still, the available resources and funding are inadequate, and we recognize that."

Prospects for improved funding remain bleak. The

IN THE EARLY 1980s
THOUSANDS OF ANTI-
OFFSHORE DRILLING PRO-
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Off the Florida Keys, a bottle-nosed dolphin (top left); at Monterey Bay, a sea otter (above) raises its paws.

\$12 million that was eventually appropriated for 1995 is well below the \$20 million approved by Congress in its 1992 reauthorization or the \$30 million recommended as "adequate" to meet program goals in the *Potter Report*, written by an outside review panel established by NOAA in 1991. Furthermore, when it comes up for reauthorization next year, the program will not be able to count on the strong backing it used to receive from the now-defunct House Merchant Marine and Fisheries Committee and its chair, Democrat Gerry Studds of Massachusetts. The new Subcommittee on Fisheries, Wildlife, and Oceans of the House Resources Committee is chaired by New Jersey Republican Jim Saxton, an environmental moderate. Saxton is a past supporter of the sanctuaries, and some ob-

GULF OF THE FARALLONES



Designated: 1981

Location: Pacific Ocean, from Half Moon Bay to Bodega Head, including the Farallon Islands

Size: 948 square nautical miles

Special features: Largest breeding population of marine mammals and seabirds in the continental United States; protects more than twice the estuarine area managed by the western-estuarine-reserve system

Species: Blue, gray, humpback, minke, and sperm whales; dolphins; seals; sea lions; sea otters; ashby storm petrels (95 percent of all such petrels breed within the sanctuary), breeding colonies of common murrelets, Cassin's auklets, and western gulls

Historic resources: More than 100 shipwrecks, including the wreck of the *San Augustine*, which dates from 1595

Activities: Swimming; diving; whale watching; canoeing; kayaking

servers see him as a buffer between ocean-protection programs and Resources Committee chair Don Young of Alaska (R), a prodevelopment firebrand who once compared his predecessor, George Miller of California (D), to a communist during a debate over the 1872 Mining Law.

Asked about the future of the sanctuary program, Saxton insists that the political realignment in Washington "doesn't mean that we're going to discard the environmental accomplishments of the past." Still, his office has made it clear that when it comes to budgetary issues,

"everything is up for review."

Despite their many financial and political problems, the sanctuaries have an advantage that some better-funded programs lack: the broad-based support of citizen activists and many coastal communities committed to the long-term conservation, restoration, and preservation of America's blue frontier.

"Given the current fiscal constraints at the federal level, we recognize that our sanctuaries can't survive on the government alone," says Karin Strasser Kauffman, chair of the Monterey citizen-advisory committee. As part of an expanding program of fundraising projects and private partnerships, her group is sponsoring a regional art contest to come up with a design for a minimum of 5,000 specialized license plates, half of whose annual \$40 price will



At Monterey Bay, a pair of two-month-old northern elephant seals (above); at the same sanctuary, a sora (top right) wanders along the shore.

go to support the sanctuary. Staff at the Keys sanctuary are also working with the state of Florida on a coral-reef license plate.

The Monterey Bay Aquarium is developing educational materials to be used throughout the sanctuary system. And in Santa Barbara, the Museum of Natural History is working with the Channel Islands sanctuary to sponsor "Los Marineros," an environmental-awareness program for 850 fifth graders. The Farallones sanctuary has mobilized 83 beach-watch volunteers and 30 at-sea science observers who provide free services worth \$350,000 a year. In Newport News, Virginia, the Mariners' Museum has established a Friends of the *Monitor* Fund. Former sanctuaries director Cava also identified \$8 million in private and government funds available for a



shore oil-tanker traffic. On Monterey's northern border, the Farallones sanctuary is also burdened with environmental abuse from the past: 50,000 corroded barrels of nuclear waste and a radioactive aircraft carrier scuttled there by the Navy in the 1950s. Still, despite these lingering threats, this stretch of ocean wilderness helps guarantee the sanctuary continued public support—and vociferous controversy.

Noise pollution from ATOC (acoustic thermometry of ocean climate) has become an issue here. The project is a "big science" global-warming experiment that uses low-frequency sounds to determine if changes in ocean temperature can be measured. It has divided the scientific and conservation panels of its citizen-advisory committee. "Chumming" is another issue that generates heated local debate. Dive-boat operators spread blood and fish guts on the water to attract great white sharks for customers willing to pay good money to play bait inside a shark cage.

Sitting in a Monterey pub, Ed Cooper argues, "You're changing the animal's natural behavior. It's like spreading

blood on the hiking trails in Yellowstone to attract grizzlies for viewing."

The argument goes on, and

DESPITE THEIR PROBLEMS, THE SANCTUARIES HAVE AN ADVANTAGE THAT SOME BETTER-FUNDED PROGRAMS LACK: THE SUPPORT OF CITIZEN ACTIVISTS.

proposed Marine Learning Center at Pier One in San Francisco, but the federal government has so far been unable to come up with the additional \$5 million needed to open it.

Rushed to dedication by President Bush during his 1992 reelection campaign, the Monterey sanctuary remains at some risk from wastewater discharges on its periphery and possible spills from near-

CORDELL BANK



Designated: 1989

Location: Pacific Ocean, from Point Reyes to Bodega Head

Size: 397 square nautical miles

Special features: Most northern protected temperate reef in the United States

Species: Hydrocorals; coralline algae; sea anemones; rockfish; whales; green, leatherback, and Pacific ridley turtles; brown pelicans, puffins, auklets, murres

Activities: Fishing; birding; whale watching

OLYMPIC COAST



Designated: 1994

Location: Off the western coast of the Olympic Peninsula, between Cape Flattery in the north and Copalis Beach in the south

Size: 2,500 square nautical miles

Special features: One of the largest populations of bald eagles in the continental United States; Makah Research and Cultural Center (archeological museum)

Species: California gray whales (March and April), humpback whales; northern fur seals

(March); Steller's sea lions; sea otters; salmon, flatheads, halibut; Dungeness crabs; red-tailed hawks, peregrine falcons; brown pelicans, black-footed albatrosses

Historic resources: Native American—village sites; ancient canoe runs; petroglyphs; Native American artifacts; numerous shipwrecks

Activities: Boating; birding; whale watching; sea kayaking; fishing



the vehemence of the debate reminds me of something sanctuary manager Ueber once told me: "I get calls all the time from people saying, 'What are you up to in our sanctuary?' People feel it's their sanctuary, they own it, and if the government wants to help them out, fine, but it's really there for them and their kids."

But without enough funding, and without strong backing for regulations to preserve threatened fish and marine-mammal habitat, enthusiasm alone won't protect America's coastlines. "The sanctuary program has designated twelve sites and begun to develop some new ideas, but fundamentally it hasn't been able to protect what needs to be protected," says Cava.

"When you consider that the sanctuaries may be carrying the burden of people's ex-

pectations and dreams for ocean protection, I think it is probably too much to bear," adds Michael Weber, coauthor of *The Wealth of Oceans*.

Still, a clear afternoon spent walking the beach at Monterey can ease those concerns. The only place I know with a richer variety of life is below the water's surface. I lean into the sea wind and recall a video I recently saw at the nearby aquarium, shot by a deep-diving robot sub. The sub was 600 feet down in the cold black canyon's mid-water range when a great white shark, wide as a jet fighter's fuel tank and sleek as death, swam through its spotlight beam. A shot of adrenaline ran through my body, reminding me of an Edward Abbey quote: "If there's not something bigger and meaner than you are out there it's not really wilderness." 🐋

FAGATELE BAY



Designated: 1986

Location: Tutuila Island, American Samoa

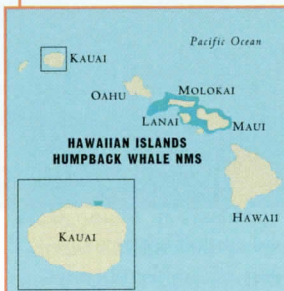
Size: 0.25 square nautical mile

Special features: Traditional fishing; the sanctuary is surrounded by a submerged volcanic crater

Species: Deep-water coral terraces containing hard and soft corals; sea anemones, limpets, urchins; octopuses; tropical fish; sea turtles; humpback whales (June through September)

Activities: Diving

HAWAIIAN ISLANDS HUMPBACK WHALE



Designated: 1992

Location: Four-island area of Maui County

Size: 1,300 square nautical miles

Special features: Principal breeding ground for humpback whales in northern Pacific

Species: Humpback whales (mid-December through mid-April), fin, sperm, pygmy sperm, minke, and pilot whales; endangered monk seals; spinner, Pacific white-sided, Pacific bottle-nosed, and striped dolphins; brown boobies, endangered dark-rumped petrels, great frigatebirds; green, hawksbill, leatherback, loggerhead, and Olive ridley turtles

Historic resources: Remains of World War II shipwrecks; offshore shark temples

Activities: Diving; whale watching; boating



At the Hawaiian sanctuary, set up expressly to protect the species, a humpback whale shows off.